action. Somewhat smaller doses slow the heart without lowering the arterial pressure, which latter *rises* remarkably during the second stage of heart-*quickening*. This stage of rapid and irregular action passes over finally into cardiac paralysis. Convallamarin seems to rank, both in qualitative and quantitative activity, with hellebore, upas antiar, digitalis, nerium, oleander, etc. As regards its action on the heart, it also resembles aconite and veratria. Each of these glucosides forms a reddish-brown solution with concentrated sulphuric acid; addition of water changing its colour to violet. Concentrated hydrochloric acid dissolves each of them, forming a red solution between blood and wine tint. If the solutions are supersaturated with soda and filtered, the filtrates give the reaction of the glucose.—*The Practitioner*, Feb. 1869, from *Græveil's Notizen*, xi. 3.

12. *Spontaneous Changes in the Strength of Solutions prepared for Subcutaneous Injection.*—Some important observations have been made on this subject by Dr. BOURDON, of Paris. Having met with several cases in which subcutaneous injection failed to produce the anticipated effects, he was led to believe that this was due to a spontaneous loss of strength in such solutions as had been kept for several months. This change could be accounted for in only two ways—either by a decomposition of the alkaloid by the growth in the solution of vegetable organisms, which assimilate to themselves certain of the elements of the alkaloid, or by the deposition on organic formations of a portion of the dissolved salts of the alkaloid; the vegetable filaments, in the latter case, serving the same purpose as threads in favouring crystallization. In one of Dr. Bourdon's experiments, a solution of sulphate of quinia and tartaric acid in distilled water lost, in ten months, 25 per cent. of its saline and acid ingredients; a minute portion of the latter being, however, deposited in the form of crystals on the filaments of an abundant growth of mycelium that appeared in the fluid. It is, therefore, legitimate to assume that solutions of vegetable alkaloids are decomposed, with necessary loss of strength, by the production in the first place of vegetable organisms, which feed as it were on the dissolved substances, and after these organisms have obtained a certain development, by the deposition on them of an additional portion of the dissolved alkaloid salts.—*Ed. Med. Journ.*, Dec. 1868, from *Bull. Gén. de Thérap.*, 30 April, 1868.

13. *Charcoal Respirators.*—Dr. WM. MARCET extols (*British Medical Journal*, January 23, 1869) the use of charcoal respirators for sufferers from phthisis, from inflammatory affections of the lungs and air passages; and states they are a valuable means of protection of the lungs against the admission of impure and cold air, and the foreign particles of dust and mechanical impurities contained in it.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

14. *Observations on the Physiology and Pathology of Hemi-Chorea.*—Dr. J. HUGHLINGS-JACKSON states (*Edinburgh Medical Journal*, Oct. 1868,) that it has long seemed to him that embolism of parts in the region of the corpus striatum gives a most satisfactory explanation of the physiology and pathology of cases of chorea.

There are three chief divisions of this hypothesis, which he illustrates by cases of hemi-chorea, although of course what follows, *mutatis mutandis*, will apply to cases of bilateral chorea.

1. That, in chorea, nerve-tissue forming the convolutions near to the corpus striatum, is in parts diseased.
2. That the nerve-tissue there diseased is *not* destroyed, but is unstable.
3. That this local instability is frequently brought about by under-nutrition

consequent on diminished supply of blood—anæmia, caused by blocking of *small* branches of the arteries supplying the convolutions referred to.

Dr. Hughlings-Jackson ranges under the following heads his arguments in support of his hypothesis: 1. The muscular *region* affected. 2. The *nature* of the movements produced. 3. The local *internal* change. 4. The *time* of the movements.

1. *The Muscular Region Affected.* It is the external muscular region affected, which points to the internal nervous organ, or part damaged. The following facts, supplied by cases of hemi-chorea, point most strongly towards the locality of the corpus striatum, which is the part damaged in the common form of hemiplegia.

(*a*). The movements are often one-sided; moreover, when chorea is bilateral, one side is usually *more* affected than the other. The quasi-accidental process of embolism is the very one likely to produce sometimes unilateral, sometimes bilateral, sometimes symptoms unequal on the two sides. Russell says: "Although the chorea may be ultimately bilateral, it *commences unilaterally* in a large majority of instances, and remains unilateral for a distinct, and sometimes a considerable period of time."

(*b*). The side affected is (as in hemiplegia from embolism) generally the right side.

(*c*). The muscles most moved in hemi-chorea are those most palsied in hemiplegia from destruction of part of the corpus striatum. In these so-called one-sided cases, however, the muscles acting bilaterally are involved, and they are *not* involved in hemiplegia. This is now, thanks to Dr. Broadbent's highly important hypothesis on unilateral and bilateral movements, not the difficulty that appears.[1] It is plain that the disease *must* be above the spinal cord when the face is involved. It is scarcely likely to be in the pons Varolii, as the face is always involved on the *same* side as the limbs.

(*d*). As in most cases, the leg suffers less than the arm.[2] This is the case, too, with hemi-spasm, although there are exceptional cases.[3]

(*e*). There is usually greater defect of speech when the right side is affected.[4] However, when the left side is apparently solely affected, speech is sometimes disordered. The reason is obvious.

(*f*). The movements sometimes die away into hemiplegia, quite like that which destruction of nerve-tissue in the corpus striatum produces, and in almost all cases there is *some* paralysis. Occasionally, but yet rarely, we find the paralysis almost as absolute in degree as that found in hemiplegia from clot.

The foregoing evidence points to the region of the corpus striatum.

2. *The Nature of the Movements.* The "disorderly movements" are not mere spasms and cramps, but incoherences of *movements of muscles*, and they are *successions* of *different* movements. Now, it is clear that close upon the corpus striatum lie the rudimentary arrangements of fibres and cells for the highly complex and widely associated movements of speech; and it is, independently of other arguments, at least plausible, that corresponding movements of the arms should have their "centres" here too.

3. *The Local Internal Change.*

(*a*). The general nature of the local changes. From the fact that we have never agreed as to its nature, is some evidence that the change in nervous tissue in chorea is a *minute* one. Although patients with chorea may complain of headache, they never, or certainly very rarely, suffer this intense pain in the head, or urgent vomiting, which occurs with *coarse* disease of the brain; and there are never any very great changes—usually none—in the optic disks. Great defect of sight (from optic neuritis) occurs not unfrequently with unilateral palsy, and with unilateral spasm, but *never* with unilateral chorea.

(*b*). The particular nature of the local charge. It is admitted by all that we find in chorea, at least frequently, a *condition for* embolism. In some cases there is valvular murmur. In others there is a history of rheumatic or of scarlet fever. According to Kirkes, Wilks, and Andrew, vegetations are *invariably* found on the cardiac valves at post-mortem examinations of those who have died of chorea. Then chorea occurs with pregnancy and parturition—states under which it is admitted that *paralysis* from embolism results.

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[1] See Med.-Chir. Review, April, 1866; Ranking's Abstract, 1866, vol. xliii.

[2] See Russell, Med. Times and Gaz., May 30, 1868.

[3] See Med. Times and Gaz., Aug. 15, 1868, p. 178.

[4] See case reported by Dr. Hughlings-Jackson, Lancet, Nov. 26, 1864.

4. *The Time of the Movements.* Just as *loss* of function—for instance, palsy—follows *destruction* of nerve-tissue, *however produced*—by clot, by tumour, by injury, etc.—so *disorder* of function, for instance chorea or spasm, results from *instability* of nerve-tissue, *however produced*—by mechanically-produced anæmia, or by inflammatory changes in the imbedding tissues, and, also, as Dr. Hughlings-Jackson thinks, by embolism.

Wherever, in cases of chorea, the change may be, and whatever may be its *particular* nature, it is clear that its *abstract* nature must be one betwixt loss of function, leading to paralysis of motion, and healthy function allowing the orderly movements of health. In short, nerve-tissue in chorea is neither destroyed nor is it healthy—it is unstable.

When a sufficient quantity of *any* part of the corpus striatum is destroyed, the arm is permanently weakened or completely paralyzed. But it must not be overlooked that the limb is "partially paralyzed;" not paralyzed in some one or more parts only, although one part of the limb may suffer more than the rest. From this we may infer that the muscular system of the arm—the *whole* of the arm movements—is represented in *each* part of the corpus striatum; and thus is accounted for the fact that permanent loss of a small part of this motor centre may be borne without palsy, or that the palsy may be recovered from. In other words, the corpus striatum is a series of Physiological Units, each unit representing not some one *part of the limb,* but potentially the *whole* of the limb. (See author's papers on Localization of "Faculties," *Med. Times and Gaz.,* Dec. 14 and 21, 1867; Aug. 15 and 22, 1868; *London Hospital Reports,* vol. ii. p. 238; and *Royal Lond. Ophth. Hosp. Rep.*, Dec. 1866.)

But although *destruction* of a *small* part of the corpus striatum need not produce any symptoms, or at least any permanent symptoms, it is plain that *instability* of a small part *must* result in symptoms; and it is equally plain that the whole of the arm *must* suffer when *any* considerable part of the corpus striatum is unstable.

Dr. Hughlings-Jackson admits that chorea often sets in after fright, but thinks that fright "produces" chorea most frequently in those who have the "condition for embolism." A person will not, he thinks, have hemi-chorea unless the nutrition of convolutions near the corresponding corpus striatum is slightly below par; and he may even then never suffer from it unless there is some sudden extreme derangement of the whole arterial system (and fright is essentially this).

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15. *Pathogenesis of Epilepsy.*—Dr. BROWN-SÉQUARD has communicated to the French Academy the results of new researches which he has made upon animals in order to study the effects of lesions of the spinal cord. Carrying further his well-known experiments of cutting one of the lateral columns of the spinal cord near the tenth dorsal vertebra, he has ascertained that epileptiform attacks may be induced in guinea-pigs, not only by this means, but also by the section of the cord higher up and nearer the bulb. He has also seen the attacks occur after a double section in the muscles innervated by the segment of the cord comprised between the two sections. Thus it would seem that the greater part of the cord takes an active part in the production of the convulsions. The brain seems to take no part in them. He has removed the brain, cerebellum, and pons from these epileptic guinea-pigs, maintaining life by artificial respiration. The epileptic attacks have continued, in spite of the removal of the encephalon. In the course of the discussion, M. Colin threw doubt upon the truly epileptic character of these attacks. Dr. Brown-Séquard said he had only once been able to produce epilepsy by unilateral division of the cord in any other animal than a guinea-pig; this was in a cat. The attacks produced in the guinea-pig were truly epileptic; and the epilepsy so produced was hereditarily